

Frequently Asked Questions About Micro-Blaze® Products

How many microbes in one gallon of product?

There are approximately 400 billion in one gallon of our Micro-Blaze Emergency Liquid Spill Control® product. In our Micro-Blaze Out® firefighting agent, there are about 200 billion per gallon. Micro-Blaze® FOG has a minimum of 700 billion microbes in a gallon. Strict quality control measures ensure our customers receive plenty of viable microbes in a quality product that will work on organic and hydrocarbon contaminants.

What is a surfactant?

Surfactants make water "wetter" by breaking down the surface tension. It also emulsifies hydrocarbon-based compounds, breaking them down into more manageable molecules that the microbes can then more efficiently digest.

What are nutrients?

Sometimes called "biocatalyst", it is comprised of substances that help support the growth and reproduction of the microbes; like "vitamins" for us. Our biocatalyst is called Budkicker.

What is a microbe?

It is a microscopic organism - bacteria. Micro-Blaze® microbes are found naturally in the world's soils; we select those strains that show exceptional degradation of household and industrial hydrocarbon and organic wastes.

What kind of microbes are in Micro-Blaze products?

Bacillus spores - they are a facultative microbe. That means they have the ability to degrade contamination in aerobic ("using oxygen") or anaerobic ("not using oxygen") conditions. Degradation is much quicker in aerobic conditions. Micro-Blaze® microbes are also unique in their ability to "go dormant" when no water is present -- when moisture returns (there is rainfall or water is reapplied) -- the microbes "reawaken" or germinate, from their spore form and start digesting the contaminants once more. With other microbes, called vegetative, once water is gone, they die away.

Will these microbes harm our wetlands?

Bacillus spores, in all likelihood, are already present in the soils and waterways of wetlands. They are very tolerant of seawater and brackish water and could "be considered the dominant species of the world's oceans."¹

If they are already in the wetlands, why not use the existing microbes there to clean up any contamination?

The indigenous, or existing, microbes are accustomed to existing in the normal wetlands ecosphere, digesting the typical flora and fauna wastes found in such places under normal circumstances. When an oil spill or other hydrocarbon / organic contamination enters the wetlands, the microbes present are neither in large enough numbers to start digesting the influx of material nor are they adapted to digesting that particular type of waste. They either die off from the concentration of the contamination or become so reduced in number that it could take years before the surviving populations become large enough and acclimated enough to start effectively remediating the waste.

Micro-Blaze[®] products' several strains of *Bacillus* microbes have been selected from the world's soils where they showed aggressive degradation of hydrocarbon and other modern, organic-based wastes. Whether they are oversprayed onto an oil spill or used to clean up a benzene tank, they work synergistically to digest the pollutants effectively and efficiently.

What are some differences between Micro-Blaze products and other microbial products?

With some products, you have to mix the microbes with water, and then let them sit for 24 hours before they can be used. This doesn't help an emergency response situation where seconds count*.

Micro-Blaze[®] products are shipped concentrated, ready to dilute to your specific needs and applied immediately. The microbes only take a few minutes to "awaken" and begin digesting their food source -- your contamination problem.

Some microbial products contain vegetative microbes that do not have the ability to revert to a "spore" form when conditions become unfavorable. Micro-Blaze[®] microbes will revert to a "spore" form and will "germinate" when conditions become better; and upon recognizing that a food source is still present, will again start digesting wastes and pollution.

What is the difference between microbial products and enzyme products?

Enzymes will liquefy a waste; it will not digest it. All an enzyme product will do is change the form of the waste. Microbes produce their own enzymes which help the microbes to digest the waste, changing it into harmless byproducts of carbon dioxide and water. You can have an enzyme product with out microbes. However, without the microbes there is no bioremediation process.

Enzyme products also have to rely on strong perfumes to cover up foul odors emitting from organic sources. Micro-Blaze[®] products do have a perfume, but it is the effective digestion of the organic source which helps to remove the [odor](#), making the area more pleasant in which to work and play.

Will the microbes in Micro-Blaze® products mutate?

No. After a site is remediated, the microbial populations return to "background levels" - a level consistent with the amount of food and water available - by dying off or returning to a spore state.

Will Micro-Blaze® products kill grass?

No.

Will the microbes eat dirt or metals?

No -- metals and dirt are not carbon-based organics.

Will the microbes eat my asphalt roadway?

No. Due to the density of the material on a road or paved surface, it would take a very, very long time before anything occurred. The product is to be washed off the paved areas with water. The microbes cannot digest contaminants without water. The gasoline or other fuel and chemical spills on the asphalt is the cause for concern; those compounds can pit and deteriorate a road surface quickly.

How long does it take the microbes to eat a gallon of oil?

It all depends on surface area, oxygen, water and nutrients. If it is in a gallon bucket, it will take a very long time (unless you have aeration equipment, plenty of water and have monitoring for nutrients). If it is spread thin, like on a roadway, it may be digested in a very short time with favorable conditions.

Microbes are like people -- they do best with plenty of water, a food source and oxygen. The gallon of oil would best be treated with 1 quart of Micro-Blaze Emergency Liquid Spill Control® diluted with 10 gallons of water in a 55-gallon drum and aerated. If the gallon of oil is spilled along a roadside, good results have been obtained with a 3% solution of Micro-Blaze® oversprayed on the spill from water-type fire extinguisher or even a garden-style sprayer. There is usually good air exchange and natural rainfall keep the microbes digesting the waste. There is usually no need to "dig and haul" in these cases*.

Will the microbes eat my oil reserves in the ground?

No. The microbes do not have enough oxygen or water in pure oil. They will not seep into and digest oil in oil holding areas.

Is Micro-Blaze on any kind of "approved for use" listings with government agencies?

Yes, Micro-Blaze® is listed for use in many US states and a number of countries. Micro-Blaze® is on the U.S. EPA National Contingency Plan [NCP] as a bioremediation agent**. Micro-Blaze Emergency Liquid Spill Control® and Micro-Blaze® F·O·G have been tested and Certified by NSF International.

On what types of compounds will Micro-Blaze[®] products work?

- Benzene
- Petroleum products such as gasoline, diesel, motor oils
- Aviation fuels such as: JP-8, JP-5, av-gas
- Glycols (antifreeze compounds)
- MTBE
- PAHs, TCE
- Methanol
- Toluene, acetone and paint sludge
- Polyurethane resins wastes
- Condensate from pipelines
- Organics such as greases, fats,
- Restaurant greases, oily residues, cellulose waste < kitchen.htm >
- AFFF wastes
- Odious odors from toilet holding tanks of boats, RVs, trains, buses, porta-pottis, latrines at parks and other remote sites

1: Sonenshein, Al, etal. 1993. *Bacillus subtilis and Other Gram-Positive Bacteria*. AMS. Washington, D.C., page 12.

*: Always work in accordance with your local, regional and federal environmental authorities as to proper spill treatment protocols in your area.

** This product is listed with the U.S. EPA on the NCP Product Schedule as a bioremediation agent. Disclaimer as required by U.S. EPA regulations: This listing does not mean the EPA approves, recommends, licenses, certifies or authorizes the use of Micro-Blaze Emergency Liquid Spill Control or any other product on an oil discharge. This listing only means that date has been submitted to EPA as required by subpart J of the NCP § 300.915"
